O-0304

TRIANGULATE ON A DISTRESS BEACON SIGNAL

CONDITIONS

You are part of a ground or urban direction finding team assigned to locate a distress beacon that is 4 kilometers away. Your team has a direction finder, and has taken magnetic azimuths to the distress beacon from two points that are at least 45 degrees apart. You have a map, protractor, straightedge and a pencil.

OBJECTIVE

Utilizing the azimuths recorded, within 10 minutes, plot the location of the distress beacon within 500 meters by triangulation on a topographic map or aeronautical chart.

TRAINING AND EVALUATION

Training Outline

1. When involved in a distress beacon search, the ground or urban direction finding team will probably be given a fairly large area to cover. Through the use of triangulation, the team leader can quickly narrow the search area.

2. In order to locate a distress beacon by triangulation:

a. Conduct a map study to determine where to take reading from. Specifically look for:

1) High terrain features. these are normally places where you are most likely to receive the signal.

2) Travel routes.- to determine how to traverse the area.

3) Presence of major power lines and buildings, which can block the distress beacon signal. These are bad places to take a reading.

b. Obtaining readings from at least two locations. Two methods can be used to determine where to take readings.

1) Connect the DF unit to an external 1/4 wave-2 meter antenna mounted on the team vehicle. Drive around the search area in a set pattern until the signal is heard, at which point direction finding can be accomplished using the mast antenna assembly.

2) Drive to high, clear locations and attempt to take readings using the mast antenna assembly. If no signal is heard, proceed to the next location.

c. At each site where a reading can be taken.

1) Plot the point on the map where you took the reading.

2) Determine the azimuth to the distress beacon (see task O-0301: Determine Distress Beacon Bearing).

3) Plot the azimuth on the map, making sure to convert from magnetic to grid azimuth (see task Determine and Plot Azimuths on a Map).

4) Remember to report each reading to mission base. Include your location, the bearing to the distress beacon, and the signal strength.

d**. TRIANGULATION:** Extend the line you drew for each azimuth until they cross. The distress beacon should be located at or near the intersection of the lines (this technique is most accurate when the lines intersect at a 90 degree angle. The more parallel the lines, the less accurate the plot). Take additional readings and draw more lines to increase the accuracy of the plot.

Additional Information

More detailed information on this topic is available in Chapters 5 and 6 of the Ground Team Member and Leader Reference Text.

Evaluation Preparation

Setup: On a map, determine a distress beacon location. Determine two points where DF readings could be taken and mark them on a map. Make sure to choose two points which will result in azimuths to the practice beacon that will intersect at no less than a 45 degree angle and are about 4 kilometers from the practice beacon. Determine the azimuth from both points to the practice beacon location, but don't mark these, or the practice beacon location on the map. Convert the azimuths to magnetic azimuths. On a sheet of paper, write down the practice beacon location and the magnetic azimuths from each point. Provide the individual to be tested with the map, a pencil, a protractor, and a straight edge.

Brief Team Leader: Tell the team leader that he is leading a team on a practice beacon search. Ask the team leader to describe two methods of finding a points to take DF readings from. Then tell the team leader that his team has taken readings from the two marked points. Give the team leader the magnetic azimuth from each point, and tell him or her to locate the practice beacon within 10 minutes.

Evaluation

Performance measures	Results	
1. Describes both methods of determining locations to DF from.	P	F
2. Locates the practice beacon within 500 meters.	P	F
3. Completes step 2 within 10 minutes.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.